Internet and distance learning as a tool for further education

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Abstract

Background. Modern information technology enables alternative strategies for education and communication. This is a description of a project for systematic utilisation of the internet for distant meetings and professional communication within geriatric medicine.

Method. A net site has been developed and is being used for the distribution of professionally relevant material, as well as visual aids for audio conferences. The hospitals take their turn giving introductions, and active audience participation is a must. The project has been assessed through a questionnaire survey.

Results. 88 audio conferences have been carried out since September 1998. The number of participating hospitals has increased from 6 to 28; the audience varies from 40 to 90 per session. On average, 56 % are doctors, 19 % nurses, 20 % physiotherapists or occupational therapists, 4 % have other backgrounds. 100 persons returned the questionnaire (response rate 86 %). At an ordinal scale from 1 (bad) to 5 (good), respondents’ median global assessment of the project was 4 (interquartile range 3 - 4); they were particularly satisfied with the professional standard of the lectures, and they found it motivating to work in a field in which modern information technology is put to use. Their use of the net site for other purposes than the audio conferences was very limited.

Interpretation. Health professionals in the field of geriatrics saw the project as a help in keeping themselves up to date. Audio conferences may supplement intramural educational sessions but cannot substitute for them.

Introduction

The increase in the knowledge base of modern medicine means that doctors need to spend more time updating themselves professionally. Hospital departments who want to train specialists have to provide at least two hours a week of organised educational interventions. It can be difficult, especially for small departments, to organise a lot of good quality teaching. Doctors in small departments, particularly those in outlying areas, suggest that there is often an unmet need for professional communication with colleagues within their specialty.

Geriatrics has traditionally been a small field in Norway, with relatively little prestige (1). In 1996 a questionnaire was carried out among 22 consultant level doctors in Norwegian geriatric units. All felt that there was a need for Norwegian geriatrics to be more closely linked and a need to establish a shared platform for diagnostic and treatment procedures. They wanted more regular contact with their peers in other places and they expressed a strong belief that information technology could be used to help achieve this. (R Pettersen, unpublished data). At that time, there were already some experiences of distance learning from the field of urology using a data network organised through the Norwegian Institute for Urology (2). The Norwegian Geriatrics Society decided to establish a similar project. Below, we present the experiences of the project as well as the results of an evaluative survey among those who took part in the distance learning organised by the project.
Materials and Methods

Establishment and organisation of the project
Through the then National Geriatrics Programme in 1997, funds were made available to pay a project leader, and since 1997, the author of this article has been employed as project leader in a 20% post. The project received the name Geriatrics IT services (GerIT) and was formally based at the University Research Foundation (UNIFOB) in Bergen within the National Geriatric Dissemintation Centre (3). During the start up phase, there were also funds from a pharmaceutical company to cover the technical side of the data work. Later the project built up the necessary IT skills and did not need further consultancy.

The projects areas of activity
The main aim was to facilitate communication between the different geriatric environments in Norway. To begin with, we planned a separate closed data network, but changed the strategy during the project. The solution in the end was to set up our own home page on the internet (4) which could serve as the infrastructure for professional communication within the geriatrics field and, at the same time, present Norwegian geriatrics to others. The double aim was maintained by having username and password access for the pages which served internal communication within the field. The pages were used, among other things, for distributing shared diagnostic or treatment procedures, but the most important use was the regular distance learning meetings.

For the distance learning, the hospitals took turns to organise a tutor. This person provided slides and lecture notes which were distributed over the internet pages in advance. When the teaching session started, all the participants had already downloaded the slides. A telephone meeting was set up between the participating hospitals who needed to have a loudspeaker telephone available. As the teaching proceeded, the participants clicked through the slides on their own PC screen as directed by the lecturer. Each teaching session lasted about one hour, of which 40 minutes were introductory lecture and 20 minutes for questions and discussion. The teaching was primarily aimed at doctors under specialist training for geriatrics, but it was also open to other healthcare staff in the geriatric teams and to other doctors. We preferred doctors in specialist training to carry out the lectures, but qualified specialists and representatives of other professional groups could also do so. Statistics were kept of the number of participants at each hospital. Slides from all the lectures were available on the web pages and participants were explicitly allowed to use slides from other people’s lectures in their own teaching later.

Evaluation Survey
In May 2000, a questionnaire was distributed to the contact people in the project at those hospitals which, at that time, were taking part regularly in the distance learning sessions – in total 20 hospitals – with the request that the questionnaires were given to all individuals who had attended the distance learning sessions. The questionnaires were anonymous and included a franked envelope addressed directly to the project leader. Responses were not chased up personally but contacts were asked to remind people at their work place about the questionnaires. They were also asked to report back how many questionnaires they handed out.

The questionnaire concentrated on the respondent’s evaluation of the internet-based distance learning, but also asked about the project web site in general. Answers were given by crossing off a binary yes/no choice or a 5 part ordinal scale. In addition, we registered background variables on age, gender, profession and the number of distance learning sessions.
the respondent had attended. The relationship between the respondent’s evaluation and the background variables was tested using the Chi-square test for binary variables, and Mann-Whitney’s test for ordinal variables. Because of the multiple significance testing, the limit for statistical significance was set at p < 0.01.

Results

Establishment and Start-up
Contact was initially made with a computer company who offered to set up the technical solutions and to gain the necessary funds through contributions from the pharmaceutical industry. The company did not, in fact, manage to achieve either of these tasks. The plan was that the person giving the introductory lecture would be able to control the slides shown on the participants’ PCs and use his or her own mouse to point at items on their screens. However, this system broke down when there were more than four participants. We therefore had to find a quick technical solution which was less refined but cheaper and more reliable. Subsequently the internet was only used to distribute the slides and lecture notes, and each participant had to click through them. This worked without any noteworthy technical difficulties. More detail about the experiences during the set-up phase is published on the internet (5).

Use of the Project's Web Site
During the project period, the web site was used to distribute increasing amounts of information. This was primarily directed at doctors and other healthcare staff within clinical geriatric work, but also other doctors, government agencies and the public. In the beginning, the project leader had to produce or obtain most of the information on the site, but gradually the geriatric departments began to use the site more to distribute materials which others could use. Table 1 gives examples of material published on the site.

Distance Learning
Distance learning sessions were held once a week from September 1988 and in total there have been 88 sessions. During the first few months, three sessions had to be interrupted for technical reasons, but otherwise the sessions went as planned. In the beginning, six hospitals took part and the number gradually increased. By March 2003, 28 departments took part regularly, but not all every time. Most of the units taking part were hospitals but there were also district geriatrics teams, council rehabilitation units and district medical offices. The number of individuals taking part is shown in Figure 1. During the first year, the number of participants was between 20-40 and during the year prior to this article, it has been 40-90. Of the participants, on average 56% have been doctors, 19% nurses, 20% physio- and ergo-therapists and 4% other professions. The registration of participants is based on the information given by each unit at the start of each teaching session. Participants arriving after the start are not registered so the figures shown a minimum number of participants. Table 2 shows examples of themes discussed. 44 of the lectures were held by qualified specialists, 34 by doctors training to be specialists and 10 by others. The Specialist Council and the Specialist Committee of the Norwegian Medical Association accredited the teaching to count for up to half the obligatory internal training for specialist trainees.

Evaluation
The contacts at the hospitals reported handing out 116 questionnaires. 100 were returned which gives a response rate of 86%. Of the respondents 33 were men. The median age was 45 (interquartile range 36-55 years). 29 were qualified specialists, 24 were doctors training to be specialists, 25 were nurses, 19 were physio- or ergo-therapists and 3 had other professions.
The questions asked and the range of responses are shown in table 3. On an ordinal scale from 1 (poor) to 5 (good), the respondents’ total median evaluation of the distance learning was 4 (interquartile range 3-4). The respondents scored highly on questions about the outcomes of learning and the subject and scientific content of the distance learning, and they found it motivating in itself to work in a field where new teaching methods were being tried out. They also felt that the project had made it easier to fulfil the requirements of weekly teaching time for trainee specialists. They had not used the project’s internet site much beyond the distance learning, and they had not received much benefit from the project in terms of developing procedures for their unit. Respondents who had participated in more than half of the distance learning meetings, had, more than others, gone through the slides themselves (independently of the distance learning meeting) \( (p < 0.001) \), and used the slides from the distance learning as a tool in their own teaching \( (p < 0.001) \). There were no significant relations between the background variables and the respondents’ answers.

**Discussion**

We based the distance learning on telephone conferences in combination with distribution of the slide presentations via the internet, and not on video-conferencing. The advantage of our set-up was that it is flexible and independent of advanced technology or user support. Staff can take part in distance learning very near to their workplace, and don’t need to move to the hospital’s video-conferencing studio. We also see advantages in integrating the distance learning with an internet-based system of professional development and communication within the field of geriatrics, where an archive of slides from all the presentations is available. The system is very cheap to run, and has few demands on technology or telephone lines. The main disadvantage is that people can’t see each other during the teaching. It has, on occasion, taken some time to get a discussion going after the lecture, and this would no doubt have been easier if participants had had eye contact. On the other hand, discussions have often been very interesting and instructive once they have got going, because views have come from different hospitals and from different parts of the country.

It has been difficult to get less senior doctors to take on the major part of the teaching, as we had wished. It appears that the social barrier to teaching is greater via a telephone meeting than when the teaching only occurs locally. The project relies on the consultants in participating hospitals motivating assistant doctors to take on the task of teaching, and giving them time to prepare. The educational benefit is undoubtably greatest for the person giving the lecture.

The questionnaire has methodological weaknesses and was carried out some time ago. However it gives pointers as to which of the project’s aims were valued by the target group. The respondents saw the distance learning as by far the most important part of the project, and their responses can indicate that the project contributed to motivating doctors and other healthcare staff to make a commitment to geriatrics and it helped departments to offer trainee specialists good teaching. The respondents used the other parts of the project’s home pages to a lesser extent than the distance learning.

Putting the project into practice was a learning experience but not without difficulties. The process was demanding in terms of workload, and would have been difficult to carry out if there had not been a part-time employee to carry the work forward. It also proved to be important to concentrate on simpler but reliable technology which allowed the project to build up the necessary competence and become independent of external consultants for data or
technology support. Our experience was that such services were costly and the consultants did not have the competence they claimed.

References

Table 1 - Examples of information made available on the project’s web site

The programme for the distance learning meetings.

Slides from all previous distance learning meetings.

Recommended tests and scoring scales for use in clinical geriatrics, such as:

- Barthel’s index for evaluating daily function
- Functional reach (FR) balance test
- Montgomery-Aasberg Depression Rating Scale (MADRS), depression scale Mini Mental Status (MMS)

Compendia, teaching materials and protocols, such as,

- Compendium of geriatrics – aimed at medical students
- Method Book for rehabilitation of stroke patients
- Protocols for investigating fall tendencies

Links to international web sites with good quality geriatric information

Overview of the literature available from the National Geriatric Dissemination Centre.

Table 2 - Examples of topics in the distance learning in Geriatrics

- Arch of aorta as a source of acute brain ischaemia
- Vitamin C deficiency in the elderly
- Delirium – (acute confusion)
- Dementia – treatment with and without medicines
- Establishing a dedicated geriatrics service at a local hospital
- Genes and aging
- Heart failure and diastolic dysfunction in the elderly
- Thrombolytic treatment of acute ischaemic stroke
- Mental incapacity and protection in dementia
- Urinary tract infections in the elderly: over or under diagnosis?

Table 3 - Range of responses to the questionnaire given to participants in the distance learning for geriatrics
Scoring: 1 = Little/poor 5 = a lot /good N= 100

<table>
<thead>
<tr>
<th>Question</th>
<th>Median % yes in yes/no questions</th>
<th>Interquartile range</th>
</tr>
</thead>
<tbody>
<tr>
<td>To what extent has the distance learning taught you what is good professional practice within geriatrics?</td>
<td>4</td>
<td>3-4</td>
</tr>
<tr>
<td>To what extent has the choice of topics been in accordance with your learning needs?</td>
<td>3.5</td>
<td>3-4</td>
</tr>
<tr>
<td>Do you feel that distance learning can help our professional practice move closer to the scientific basis?</td>
<td>4</td>
<td>4-5</td>
</tr>
<tr>
<td>What professional benefit have you gained from listening to the actual lectures?</td>
<td>4</td>
<td>3-4</td>
</tr>
<tr>
<td>What professional benefit have you gained from the discussions after each lecture?</td>
<td>4</td>
<td>3-4</td>
</tr>
<tr>
<td>Have you ever gone through the slides on your own (not during the actual presentation)?</td>
<td>49%</td>
<td></td>
</tr>
<tr>
<td>Have you used the slides from the distance learning in any teaching you have carried out yourself?</td>
<td>27%</td>
<td></td>
</tr>
<tr>
<td>If you have worked with developing written protocols or procedures for your own department, to what extent has the distance learning helped with this work?</td>
<td>2</td>
<td>1-3</td>
</tr>
<tr>
<td>Has the distance learning motivated you to any further study in the topics covered?</td>
<td>3</td>
<td>2-3</td>
</tr>
<tr>
<td>To what extent have you found the project’s web site useful outside of the distance-learning?</td>
<td>2</td>
<td>1-3</td>
</tr>
<tr>
<td>To what extent has the distance learning led to professional contact with colleagues working in geriatrics in other hospitals?</td>
<td>2</td>
<td>1-3</td>
</tr>
<tr>
<td>How much has the distance learning motivated you to continue working in geriatrics?</td>
<td>3</td>
<td>3-4</td>
</tr>
<tr>
<td>Do you find it motivating to work in a field which is actively useful modern technology?</td>
<td>4</td>
<td>4-5</td>
</tr>
<tr>
<td>To what extent has the distance learning made it easier to fulfil the requirement for weekly teaching time for trainee specialists?</td>
<td>4</td>
<td>3-5</td>
</tr>
<tr>
<td>What is your overall evaluation of the distance learning?</td>
<td>4</td>
<td>3-4</td>
</tr>
</tbody>
</table>

Figure 1 shows the number registered participants per meeting over the years 1998-2003.